101 - TEMPORAL VARIATION OF THE NEUROMUSCULAR AND FLEXIBILITY RESISTENCE PARAMETRES OF INDIVIDUALS EXPOSED TO A SAME PROFESSIONAL PERFORMANCE STANDARD

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INTRODUCTION

With the arrival of motor vehicles, it was steep the motorization on streets and avenues, making a trouble for the big cities. The urban transportation needed solutions to the rendered crisis, and the usage of bus to the public transport was one of the solutions for tackling that growth worldwide. However, the precarious occupational health of the bus drivers is a relatively often condition among these workers.

In the great Brazilian urban cities where the most used solution is the public transportation, a large number of these professionals mainly in buses. In many studies, we highlight the existence of changes in the conditions of the urban bus drivers health that are of their own profession, such as: overweight, low back pain, dorsalgia, vasculopathy, high blood pressure, contact dermatoses, hearing problems and psychological disorders and others. Yet it is observed that the professional activity of these individuals with a high work load, and the often stress which they put through, perhaps may cause chronic degenaratives illnesses.

Several Brazilian and foreign scientific studies mentioned on a 15-year-olds literature review (1987-2001) performed by Júnior (2003) has shown that the bus drivers fall ill in a different than the population in general. Factors such as general working conditions, physical inactivity, and workplace, among others that set different situations to the bus drivers life. Most of the scientific works on neuromuscular and flexibility fields are addressed to athletes and a few are upon to the workers in case. After extensive research, it was possible to find published material that approach the topic making believe on its relevance concerning to society even if it is in a quiet manner.

Anderson (1992, cit in Júnior, 2003), based on a medical history and on a physical test, carried a study with bus drivers from California (EUA), comparing to a control group, reported that 80,5% of the assessed drivers had tried some back pain episode on.

For the few reports and growing importance of this category in large Brazilian cities, Pinho et al. (1991) proposed to study the issue. Realizing that relevance, we put forward making this study that ascertained how the neuromuscular and flexibility values in bus drivers aged between 25 to 57 years old in a two-year period. The observations of the results will be able to contribute to indentify the gaps and advances of knowledge on this area.

METODOLOGY

Observational study realized during continuous two years and it was constituted of observations in three different times. The sample was comprised by 179 male individuals aged 25-57, all of them bus drivers from a bus company of interstate transportation in Bahia, Brazil. Selection criteria: being driver of that company, have done a physical assessments academy in Feira de Santana - Bahia, absence of health problems at the time of physical assessments, have been evaluated in a two-year interval, with three observations in this period, the interval between the observations could not exceed 15 months and at least 9 months, drivers should present results on all variables selected for the study. The analyzed variables and the object of study were: neuro motor exercises (abdominal and of the upper limbs) and flexibility. **Procedures:** we collected data from a gym physical assessment record from Feira de Santana, for recording it was used a physical test program for Windows. All measurements were performed by two graduate teachers in Physical Education who were unaware of the study hypothesis. The test battery consisted of: height-weight measures and measures of body composition. The subjects were split into five groups: Group 1 - Drivers belonging to the age group of 25 to 30 years (G1). Group 2 - Drivers aged 31-35 years (G2). Group 3 - Drivers aged 36-40 years (G3). Group 4 - Drivers aged 41-45 years (G4). Group 5 - Drivers aged 46-59 years (G5). **Abdominal flexion test:** In order to measure the efficiency of the abdominal muscles and hip flexors, the subject was placed supine with knees bent forming an angle of ninety degrees. The feet were flat on the floor and his arm should be crossed and supported the front of the torso. The evaluator noted that the foot would always be evaluated in contact with the floor throughout the movement. The head of the assessed individual was in contact with the ground at the beginning of the test. To signal the start of the test, patients, took the torso toward the thighs and back to the starting position. The individual performed the largest number of repetitions for 60 seconds. It was not allowed to rest during the 60 seconds of the test execution. **Test arm extension:** the evaluated driver rested his hand on the floor, shoulder-width apart and keeping your elbows straight. In this position, the arms flexed evaluated until it almost touches the trunk floor, keeping back straight, and then returning to the starting position. **Flexibility test:** Testing sit-and-reach (sit and reach) Bank Wells and Dillon(cit. In Physical Test, 1996), is a flexibility test that uses a particular measuring instrument, called the Wells and Dilon's bench. This test consisted of placing the assessed individual sitting with legs extended forward, causing it to flex the trunk before with hands and arms extended. It was recorded then, the maximum point outstretched hands could reach. In this test, the feet should remain flat on the bench. The subject was barefoot, because failure to do so may under estimate the outcome orientation. Impulses were not allowed to carry the trunk forward and thus over estimate the values achieved in the bench. It was recommended brief heating consists of four to six stretching exercises before beginning the test. To Novaes and Vianna (2003), best known for evaluating the flexibility test is the sit and reach Wells (linear measure), the test is to measure the distance in centimeters that dactylion points are relative to the zero point situated at the level of the plantar region, being the individual sitting on the floor with knees extended. The equipment is a deflectometer, which consists of a bench of plywood with as caleonits top edge. The data base we use has a ruler placed at the far point of23.0cm, as these patterns according to the physical test for windows (2000) are identical to the Canadian Standardized Test of Fitness. **Statistical analysis:** Data collected were introduced into the referred computerizedprogramSPSS11.0, to apply statistical treatments.

RESULTS AND DISCUSSION

1.1 Descriptive Statistics of the Flexibility Tests of the bus drivers in the five age cohorts

Table 01. Descriptive statistics: arithmetic mean and standard deviation of the Flexibility tests.

Variables	N	Mínimum	Maximum	Average Standard Deviation	25-30 age G1	31-35 age G2	36-40 age G3	41-45 age G4	46-59 age G5
Flexibility Test 1	179	9	44	27,18 ±7,69	25,65 ±10,0	28,07 ±7,4	26,7 ±6,8	27,14 ±8,0	27,6 ±7,2
Flexibility Test 2	179	3	52	28,79 ±8,06	25,0 ±10,2	29,1 ±8,2	29,0 ±8,1	29,2 ±7,6	29,8 ±6,4
Flexibility Test 3	179	4	50	27,47 ±8,37	24,7 ±9,1	28,2 ±8,8	27,7 ±8,9	27,2 ±8,1	28,1 ±6,8

Flexibility in testing we found significant differences in the results, the minimum value of 3cm and maximum 52cm, demonstrates the diversity in the observations. It was not identified improvements in average of this physical quality comparing an evaluate on to another, and the values of the standard deviation increased in the third observation. In flexibility testing was evident fluctuation of results between the groups. As we deploy a difference in the data in G2, which achieved the best results on average of the first and third observations between groups. Moreover, the lo we results were supposed to be from the older drivers; however, driversinG1 presented these lower results. We also observe that the standard deviation of the means in theG1surpassesthe average of other groups, featuring extreme values in the ratings, and even in this distinguished group as the only group to de crease the values from the first to the third observation.

1.2 Descriptive statistics of abdominal and push-up tests of the five age groups of bus drivers

Table 02. Descriptive statistics, the arithmetic mean and standard deviation of abdominal land push-up tests of the five age groups of bus drivers

Variables	N	Minimum	Maximum	Standard Deviation Average	25-30 age G1	31-35 age G2	36-40 age G3	41-45 age G4	46-59 age G5
Abdominal Tests 1	179	11	54	30,22 ± 7,15	29,1 ± 6,3	32,3 ± 6,1	31,3 ± 7,2	28,7 ± 5,5	28,7 ± 9,6
Abdominal Tests 2	179	13	54	32,41 ± 6,85	32,2 ± 5,4	33,5 ± 5,7	33,7 ± 6,0	31,0 ± 8,0	31,0 ± 7,9
Abdominal Tests 3	179	15	53	32,78 ± 6,84	33,1 ± 5,8	33,6 ± 5,3	34,1 ± 5,9	31,0 ±8,3	31,9 ± 7,8
Push-up Tests 1	179	16	56	33,20 ± 7,23	32,5 ± 8,3	35,5 ± 6,0	32,2 ± 7,3	32,7 ± 6,6	32,4 ± 8,2
Push-up Tests 2	179	16	60	35,81 ± 7,51	36,9 ±9,9	36,9 ± 6,0	35,0 ± 7,3	35,3 ±7,8	35,4 ± 7,5
Push-up Tests 1	179	21	58	37,72 ± 7,09	37,3 ±8,2	38,1 ± 7,2	38,4 ± 7,1	36,4 ± 6,7	37,7 ± 6,7

In abdominal tests we found the minimum value of 11 repetitions and the maximum value of 54 repetitions (rep.).

In the results of the tests abdominal we highlight the increased ability to hold a greater number of repetitions abdominal among the observations. This increase may be related to an improvement in motor learning and execution of the exercise and / or a concern for drivers in training this exercise at home or at the gym. We found an increase in the number of repetitions of abdominal G1 to G2 and G2 to G3, and only after that the values decreased in group 4 and remained stable in the G5. The results of the test with abdominal assessment from the groups point to a lower efficiency in the execution of this exercise with advancing age, being more evident after 40 years of age.

In the push-up test we came across the minimum value of 15 repetitions and maximum of 60 repetitions. The values of the standard deviation of the averages at the three observations were around 7.23 repetitions and the average had increased from the first observation (33,20 rep.) to the second and (35,81 ref.) there was an increase from the second observation (35,81 rep.) to the third observation (37,72 rep.). These data, as in abdominal tests may have been achieved by efficiency in motor learning in the execution of the exercise on observations and / or exercise training at home or in any gym fitness. In lean body weight the results are depicted by the increase in lean mass in the ratings, which may suggest that some drivers performed some physical activity.

The results in push-up tests increased from the first to the second observation, and from the second to the third observation, as it was already mentioned in the analysis of abdominal exercises may have been recorded by the improvement in the execution of this movement or the drivers have done any physical training. The best results were noted in G2, and different from what we would expect data from the bending of the G1, G3, G4, and G5 test arm were closer from each other, not portraying a disability in performing this exercise with advancing age. The ability to maintain these results with advancing age, distinct from those found in the abdominal tests, may be associated with the occupation that requires effort of the upper limbs and a little requirement of the abdominal muscles during their labor.

CONCLUSIONS

In Flexibility testing we found meaningful differences in the results and no improvement in averages was identified, this physical quality of one evaluation to another, and the values of the standard deviation increased in the third observation. To Achour (1998), stretching exercises are essential for the prophylaxis and treatment of muscle-tendon shortening.

In abdominal tests we highlight the increased ability to hold a greater number of repetitions abdominal between observations. This increase may be related to an improvement in motor learning and execution of the exercise and / or a concern for drivers in training this exercise at home or at the gym.

The results in push-ups increased from the first to the second observation, and the second to the third observation. The best results were noted in G2, and different from what we would expect data from the bending of the G1, G3, G4, and G5 test arm were closer from each other, not portraying a disability in performing this exercise with advancing age. The ability to maintain these results with advancing age, distinct from those found in the abdominal tests, may be associated with the occupation that requires effort of the upper limbs and little requirement of the abdominal muscles during their labor.

This study highlights that acrros physical assements undertaken individuals present in general, an improvement in their neuromuscular indicators over time.

Norman (1958) conducted one of the classic studies about bus drivers in London City, the largest urban passenger traffic that undertakes in the world. Over the years, we still need further studies on major changes in working conditions and workplace and healthy habits of the bus drivers aiming to minimize the occupational effects on the health of these workers.

REFERENCES

ACHOUR JÚNIOR, A.(1998). Flexibilidade: teoria e prática. Atividade Física e Saúde,Londrina-Paraná, 1ª edição.

JÚNIOR, E, A, S. De que adoecem e morrem os motoristas de ônibus? Uma revisão de literatura. Revista Brasileira de Medicina no Trabalho, Belo Horizonte, vol.1, nº 2, p. 138-147, outubro a dezembro de 2003.

KERLINGER, F. N. Metodologia da pesquisa em ciências sociais. São Paulo: EPU / EDUSP, 1980.

NORMAN, L.G. (1958). The health of bus drive: A study in London transport. The Lancet, London, October 807-811.

NOVAES, J. E VIANNA. J.(2003). Personal training e condicionamento físico em academia. Rio de Janeiro: Shape, 2ª edição.

PHYSICAL TEST 3.2.(1994-2000). Sistema de Avaliação Física e Nutricional para adultos e crianças. Manual do usuário. Terrazul informática Ltda.

PINHO C. ET AL.(1991). Alterações cardio vasculares em motoristas de ônibus. Revista brasileira de saúde ocupacional, São Paulo, Brasil, 19(73):53-8.

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TEMPORAL VARIATION OF THE NEUROMUSCULAR AND FLEXIBILITY RESISTENCE PARAMETRES OF INDIVIDUALS EXPOSED TO A SAME PROFESSIONAL PERFORMANCE STANDARD

ABSTRACT

The survey aimed to ascertain how neuromuscular and flexibility values in bus drivers aged 25-57 years varied over a time interval of two years. The precarious occupational health, for the bus drivers, is relatively frequent among these workers. Several national and international studies have shown that the bus drivers fall ill in and die a different way compared to the population in general. The study was observational, scored for two consecutive years and consisted of observation sat three different times, the values of the endurance test of the abdomen, upper limb strength and flexibility (sit-and-reach). The study sample consisted of 179 males, aged 25-57 years, all bus drivers belonging to a company of interstate transportation from Bahia-Brazil. The subjects were divided in to five age groups. The data collected were introduced into referred computerized program SPSS11.0, to apply statistical treatments. This study highlights that acrros physical assements undertaken individuals present in general, an improvement in their neuromuscular indicators over time. We still need to deepen into more scientific studies about major changes in working conditions and workplace, and healthy habits of the bus drivers that are required in order to minimize the impact on the occupational health of these workers. We emphasize the need to implement programs for health promotion and better working conditions for these workers.

KEYWORDS: bus drivers, muscular endurance and flexibility.

VARIATION TEMPORELLE DANS PARAMÈTRES DE RÉSISTENCE NEUROMUSCULAIRE ET LA FLEXIBILITÉ DES INDIVIDUS EXPOSÉS À LA MÊME NORME DE PERFORMANCE PROFESSIONNELLE

RÉSUMÉ

La recherche visant à vérifier comment varié un intervalle temporel de deux ans, les valeurs neuromusculaires et flexibilité dans chauffeur de bus avec âgés de 25 à 57 ans. La santé au travail précaire, pour les chauffeurs de bus, est une condition relativement fréquente chez ces travailleurs. Plusieurs études scientifiques nationale et internationalesont montré que les conducteurs d'autobus sont tomber malades et mourir différente de la population en général. L'étude a été d'observation, a reçu pendant deux ans d'affilée et se composait des observations, à trois moments différents des valeurs de test du résistence de l'abdomen, la force des membres supérieurs et la flexibilité (sit-and-reach). L'échantillon de l'étudeétait composée de 179 individus du sexe masculin, avec âgés de 25 à 57 ans, tous les chauffeurs de bus appartenant à une entreprise de transport inter-états de l'Etat de Bahia-Brésil. Les sujets ont été répartis en cinq groupes d'âge. Les données recueillies ont été introduit dans le programme informatisé SPSS 11.0, pour d'appliquer les traitements statistiques. Nousavons encore besoin d'approfondir plusdes études scientifiques sur les grands changements dans les conditions et milieu de travail et des habitudes saines, dans les chauffeurs de bus, qui sont nécessaires, afin de minimiser les répercussions professionnels sur la santé au travail de ces travailleurs. Nous insistons sur la nécessité de la mise en œuvre de programmes de promotion de la santé et de meilleures conditions de travail pour ces travailleurs.

MOTS CLÉS : Chauffeurs d'autobus, résistence musculaire et flexibilité.

VARIACIÓN TEMPORAL DE LOS PARÁMETROS NEURO MUSCULARES, DE FUERZA Y FLEXIBILIDAD DE PERSONAS EXPUESTAS AL MISMO NIVEL DE DESEMPEÑO PROFESIONAL

RESUMO

Esta investigacion tiene como objetivo verificar como varia en un intervalo de tiempo de dos años los valores nueromusculares y de flexibilidad en conductores de autobuses con edades entre los 25 y 57 años. La salud en el trabajo de

estas personas suele ser relativamente deficiente. Varios estudios cientificos nacionales e internacionales estan mostrando que los conductores de autobuses presentan una manera de enfermar y morir diferente a la poblacion en general. El trabajo fue de observación y se basó en estudiar durante dos años a los conductores de autobuses en tres momentos distintos, con un tes de resistencia de abdomen, resistencia de los miembros superiores y la flexibilidad (sit and reach). Este estudio se dio en 179 personas de sexo masculino, con edades entre 25 y 57 años, todos conductores de autobuses, pertenecientes a una empresa de transporte del estado de Bahia, Brasil. Los sujetos en estudio fueron divididos en cinco grupos, por edad. Los datos recogidos se plasmaron en un programa informatico SSPS 11.0, para aplicar los tratamientos estadisticos. Este trabajo afirma que a traves de evaluaciones fisicas realizadas a estos individuos, en general, mejoran sus indicadores neuromusculares a lo largo del tiempo. Todavia necesitamos profundizar con otros estudios cientificios sobre cambios importantes en las condiciones y sitio de trabajo, hábitos saludables, de los conductores de autobuses, disposiciones necesarias que tienen como objetivo reducir los impactos acerca de la salud de estos trabajadores. Enfatizamos la necesidad de implementar la promoción de la salud y mejores condiciones de trabajo para estos trabajadores.

PALABRAS CLAVE: Los conductores de autobús, la resistencia muscular y la flexibilidad.

VARIAÇÃO TEMPORAL DOS PARÂMETROS DE RESISTÊNCIA NEUROMUSCULAR E FLEXIBILIDADE DE INDIVÍDUOS EXPOSTOS A UM MESMO PADRÃO DE DESEMPENHO PROFISSIONAL

RESUMO

A pesquisa teve como objetivo verificar como variaram num intervalo temporal de dois anos, os valores neuromusculares e de flexibilidade em motoristas de ônibus com idade entre 25 a 57 anos. A saúde ocupacional precária, para os motoristas de ônibus, é condição relativamente freqüente entre estes trabalhadores. Vários estudos científicos nacionais e internacionais têm evidenciado que os motoristas de ônibus apresentam um adoecer e morrer diferente da população em geral. O trabalho foi observacional, pontuados durante dois anos seguidos e constituiu-se de observações, em três momentos distintos, de valores de teste de resistência do abdômen, resistência dos membros superiores e da flexibilidade (sit-and-reach). A amostra do estudo foi constituída por 179 indivíduos do sexo masculino, com idade entre 25 a 57 anos, todos motoristas de ônibus pertencentes a uma empresa de transporte interestadual do estado da Bahia-Brasil. Os sujeitos foram divididos em cinco grupos etários. Os dados recolhidos foram introduzidos no referido programa informatizado SPSS 11.0, para aplicar os tratamentos estatísticos. Este trabalho destaca que através das avaliações físicas realizadas os indivíduos apresentam de uma forma geral, uma melhora nos seus indicadores neuromusculares com o decorrer do tempo. Ainda necessitamos aprofundar em mais estudos científicos sobre as grandes mudanças nas condições e ambiente de trabalho, e hábitos saudáveis, dos motoristas de ônibus, que são necessárias, visando minimizar as repercussões ocupacionais sobre a saúde destes trabalhadores. Destacamos a necessidade de implantação de programas de promoção de saúde e melhores condições de trabalho para estes trabalhadores.

PALAVRAS-CHAVE: Motoristas de ônibus, resistência muscular e flexibilidade